

Ultrasonic Guided Wave Simulation Toolbox for Virtual Inspection of Composites, Phase I

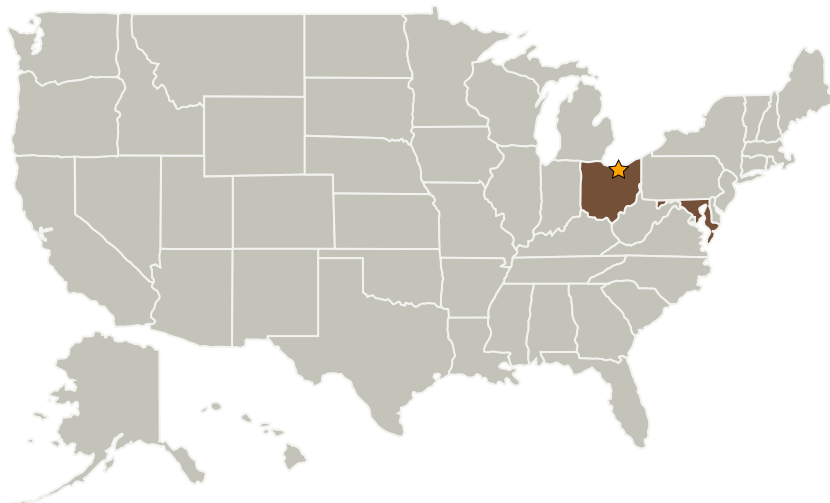
Completed Technology Project (2009 - 2009)



Project Introduction

Ultrasonic guided wave nondestructive evaluation (NDE) techniques are being used to detect flaws and damage in fracture critical structures such as composites. In order to provide early detection of aging and damage processes in composites, we propose to develop a "virtual inspection" simulation toolbox specifically for ultrasonic guided waves. This toolbox will be able to evaluate ultrasonic guided wave NDE methods for its feasibility as part of the design process for critical system components, and it would include modeling the changes in critical material properties as indicators of material aging and then quantifying the levels of detectability of these material properties with the guided wave NDE technique. This computational tool will be able to accurately model the interaction between the changes in the material properties and the probing energy of guided waves to allow the development of the inspection parameters needed for application on a particular structure.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Intelligent Automation, Inc.	Supporting Organization	Industry	Rockville, Maryland



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Maryland

Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.1 Materials
 - └ TX12.1.2 Computational Materials